United States Department of the Interior
FISH AND WILDLIFE SERVICE

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In Reply Refer To
(ES)

March 11, 1993

MEMORANDUM

To: Assistant Regional Director, Fish and Wildlife Service, Denver, Colorado

Attn: Tom Jackson

From: State Supervisor, Ecological Services, Fish and Wildlife Service, Salt Lake City, Utah

Subject: Cyanide water releases from Tenneco Minerals Company Heap Leach Mine near Goldstrike, Utah and Leeds Silver Reclamation Site near St. George, Utah

Attached is information on two mine sites potentially hazardous to Fish and Wildlife trust resources. Our contaminants specialists have visited these sites and will attempt to keep informed on their status as time permits.

Attachments

cc: LE/SLC
ES/RENO, Attn: Pete Tuttle
ES/Phoenix, Attn: Denise Baker
ES/Albuquerque, Attn: Paul Fore
Bureau of Reclamation/Boulder City, Attn: Darrell Marcus
Bureau of Land Management/SLC
Div. of Water Quality/SLC

March 1, 1993

MEMORANDUM

TO: Files

FROM: Assistant Environmental Contaminant Specialist

SUBJECT: Cyanide water releases from Tenneco Minerals Company Heap Leach Mine near Goldstrike, Utah

In January 1993 and again in February 1993, unusually heavy rains caused Tenneco Minerals Company to release water from their cyanide heap leach operation, near Goldstrike, Utah, into the Beaver Dam Wash drainage. An estimated 4 million gallons were released in January and over 8 million gallons in February. Releases are continuing at this time. Although Tenneco attempts to neutralize the cyanide before releasing water, we are concerned that residual cyanide and also heavy metals are entering the drainage and could impact two endangered fish species, the woundfin and the Virgin River chub, in the Virgin River below Beaver Dam Wash, and a candidate species, the Virgin River spinedace in Beaver Dam Wash and the Virgin River. The possibility also exists that contaminants from this source could impact the endangered desert tortoise which inhabits the Beaver Dam Wash area.

During the January release, Carol Wiens collected a water sample (January 20, 1993) at the Lytle Ranch, 25 miles below the point of discharge from the mine. This sample is being analyzed for cyanide and heavy metals. During the first February release, Carol Wiens and Bruce Waddell visited the mine site and collected addition water samples (February 11, 1993).

The mine is located about 26 miles northwest of St. George, Washington County, Utah at the south end of the Bull Valley Mountains, in Section 20 NE1/4, T39S, R18W. Elevation is about 5,000 feet, vegetation is pinyon-juniper. The heap leach operation involves piling mined ore on leach pads, sprinkling ore piles with cyanide water, and collecting the solution for extraction of primarily gold, but also other precious metals. Processed water is reused after the addition of more cyanide. It is a closed system in which water is added to offset evaporation and no water is released. However, in the event of heavy rains, especially in the winter when there is little evaporation, the system fails. Ore piled up to 100 feet high on leach pads covering up to 35 acres absorbs a significant quantity of rain water. To prevent damage to the system of ponds and pipelines, Tenneco treats and releases this excess water into an unlined sedimentation pond. This water seeps out of the pond and enters Arsenic Gulch, which drains into East Fork 0.5 mile below. East Fork enters Beaver Dam Wash 11 miles below, which enters the Virgin River 35 miles below.

On February 11, 1993 we were given a tour of the mine by Robert Wilson, Tenneco's environmental coordinator. Except for the insolvable problem of how to prevent precipitation from entering the closed system, and the deforestation and destruction of many acres, Tenneco appears to take measures to minimize environmental impacts. All process ponds except the pregnant pond, are netted with 1 1/4 inch plastic netting to exclude wildlife. They are in the process of netting the pregnant pond. Zon guns are also used to

repel wildlife at the pregnant pond and at an emergency surge pond. A few small birds but no other wildlife were observed around the site, however, mine personnel mentioned seeing a deer drinking at one of the ponds. Around the clock operations and noise from heavy equipment would tend to discourage significant use of the area by wildlife except possibly small bird use during the dry season when depressions on ore piles would trap water potentially used for drinking water.

The operation causes significant impact to the environment. The site covers 400 to 500 acres. Vegetation (pinon-juniper) has been removed, hillsides and small mountains have been destroyed as ore is mined for removal to leach pads. Ground disturbance has caused some soil erosion and siltation in the drainage below. Tenneco has attempted to catch sediment carried from the site into Arsenic Gulch before it reaches East Fork with sediment traps, but on February 11, traps were buried and water was running over or around barriers.

Release of cyanide water, however, is the major impact of the operation. Water is batch treated in the neutral pond with hydrogen peroxide and chlorine gas to neutralize the cyanide. Tenneco reports that cyanide concentration in the pond before treatment is around 10 ppm. We collected samples at the point of discharge from the mine (sedimentation pond), at the confluence of Arsenic Gulch and East Fork (0.5 mile below the sedimentation pond), and at the confluence of East Fork and Beaver Dam Wash (11 miles below Arsenic Gulch).

Tenneco does not have a water discharge permit for these releases. According to Lyle Stott, Utah Division of Water Quality, they may be given a Notice of Violation for the January and February releases but will not be fined because these were "controlled" releases and not due to negligence, Tenneco having met all design requirements. Evidently they were fined for releases in March 1991 because they were considered negligent and the released "uncontrolled". According to Lyle Stott, Tenneco has applied for a discharge permit.

We recommend the following:

1. Water and sediment samples should be taken during periods of normal flow in East Fork and Beaver Dam Wash to determine if heavy metals are accumulating as a result of the Tenneco's repeated releases.

2. The Fish and Wildlife Service should oppose issuance of a water discharge permit to Tenneco by the Utah Division of Water Quality to release excess heap leach water into the Beaver Dam drainage. If discharge is allowed under a discharge permit, we would never have recourse against Tenneco for whatever they might release.

3. The Fish and Wildlife Service should oppose issuance of a permit to Tenneco by BLM to expand their cyanide heap leach operation when their present permit expires (in about one year). The heap leach process is not and cannot be environmental sound.

ST. GEORGE, UTAH–ARIZONA